

CHAPTER 3

زاوية ميل محور الحركة عن الافق

$$\pm T_i \pm F_i \cos \theta \pm m g \sin \theta - \mu (mg \cos \theta \pm F \sin \theta) = m a$$

القوة ترفع الجسم، تضغط الجسم

مع الحركة

عكس الحركة

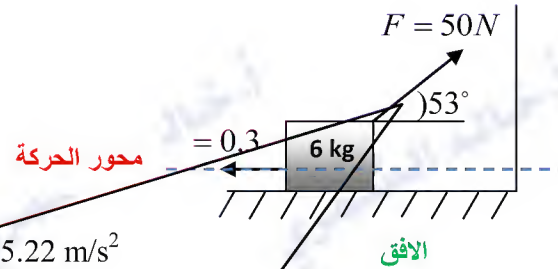
زاوية ميل القوة عن محور الحركة

قوة الاحتكاك f

N

Q40: A force of 50 N is applied on a 6 kg box, if the frictional coefficient is 0.3, the box acceleration will be:

- a) 5.22 m/s² b) 3.56 m/s² c) 5.72 m/s² d) 4.07 m/s² e) 5.22 m/s²



$$\pm T_i \pm F_i \cos \theta \pm m g \sin \theta - \mu (mg \cos \theta \pm F \sin \theta) = m a$$

لا يوجد شد صفر

$$\pm T_i \pm F_i \cos 53 \pm m g \sin 0 - \mu (mg \cos 0 \pm F \sin 53) = m a$$

$$F \cos 53 - \mu (mg - F \sin 53) = m a$$

$$50 \cos 53 - 0.3 (6 \times 9.8 - 50 \sin 53) = 6 a$$

$$a = 2.87 \text{ m/s}^2$$

Q49: A 2 kg box slides down the plane inclined at 30° relative to the horizontal. If the friction force is 3.8 N, the acceleration of the box :

- a) 4 m/s^2 b) 3 m/s^2 c) 2 m/s^2 d) 1 m/s^2

$$\pm T_i \pm F_i \cos \theta \pm m g \sin \theta - \mu (m g \cos \theta \pm F \sin \theta) = m a$$

$$\pm T_i \pm F_i \cos \theta \pm m g \sin 30 - 3.8 = m a$$

$$+ 2 \times 9.8 \sin 30 - 3.8 = 2 a$$

$$a = 3 \text{ m/s}^2$$

Q65: In the figure, the upward acceleration of the system is 2 m/s^2 .

The tensions T_1 and T_2 in the massless strings are respectively :

- a) 35 N and 59 N b) 35 N and 35 N
c) 59 N and 59 N d) 59 N and 35 N

$$\pm T_i \pm F_i \cos \theta \pm m g \sin \theta - \mu (m g \cos \theta \pm F \sin \theta) = m a$$

$$\pm T_i \pm m g \sin 90 = m a$$

$$\sin 90 = 1$$

$$+ T_1 - T_2 - m g = m a$$

$$+ T_1 - T_2 - 2 \times 9.8 = 2 a$$

$$T_1 = 59 \text{ N}$$

$$+ T_2 - m g = m a$$

$$+ T_2 - 3 \times 9.8 = 3 a$$

$$T_2 = 35.4 \text{ N}$$

